

chemical constitution of the surrounding fluid, and a consequent disturbance in its stability.

The reproductive system of *Cordylophora* consists of ovoid capsules situated on the ultimate branches at some distance behind the polypes; some of these capsules contain *ova*, others *spermatozoa*; they are plainly homologous with the ovigerous sacs of the marine *Tubulariadae*; they present a very evident, though disguised medusoid structure, having a hollow cylindrical body, whose cavity is continuous with that of the polype-stem, projecting into them below, and representing the proboscidiform stomach of a Medusa, while a system of branched tubes which communicate at their origin with the cavity of the hollow organ, must be viewed as the homologues of the radiating gastro-vascular canals, and the proper walls of the capsule will then represent the disc. From comparative observations made on other genera of *Hydroida*, the author maintains the presence of a true medusoid structure in the fixed ovigerous vesicles of all the genera he has examined, and he arrives at the generalization, that for the production of true ova in the hydroid zoophytes, a particular form of zooid is necessary, in which the ordinary polype-structure becomes modified, and presents, instead, a more or less obvious medusoid conformation, *Hydra* being at present the only genus which appears to offer an exception to this law, though the author believes that the exception is only apparent, and that further observations will enable us to refer the reproductive organization of this zoophyte to the same type with that of *Cordylophora* and the marine *Hydroida*. The author has satisfied himself that the ova-like bodies contained in the capsules of *Cordylophora* are true *ova*, and not *gemmae*; he has demonstrated in them a distinct germinal vesicle, and has witnessed the phenomenon of yelk-cleavage; and the paper details the development of the embryo to the period of its escape from the capsule in the form of a free-swimming ciliated animacule, and traces its subsequent progress into the condition of the adult zoophyte.

MISCELLANEOUS.

On the Monstrosity of a Rose. By J. T. ARLIDGE, A.B.

WITH few exceptions the flowers on a standard-rose, growing on a lawn, failed this summer to exhibit good 'blooms,' and presented various degrees and forms of monstrosity. This occurrence may be attributed to the wet season stimulating the tree to the production of wood instead of flowers. It should, however, be noted, that neighbouring rose-trees, growing under precisely the same circumstances, but of different species, produced their proper flowers; with, however, a prevailing tendency to abortive petal-growth, and the production of the condition known as the 'green-eye.'

In the tree in question the most remarkable example was that of a

flower which was repeated three times on the same axis, each time exhibiting sepals, petals (coloured and scented), perfect stamens with pollen, and imperfect semi-leafy carpels. The stem expanded into its usual rounded receptacle, fringed by the free portion of the calyx of its general character, and supporting on its discoid margin the petals, and within these numerous stamens. Some of the innermost petals were not well-coloured, nor well-developed, but small and greenish.

From the sides of the cup-like receptacle sprang several hairy styles crowned by their stigmas, of much the usual form, but still not well-formed; and along with these imperfect carpels of a green colour, and having the form of narrow leaves folded longitudinally on themselves, and many of them terminating in a fringed process or awn. Neither the normal styles nor the leafy carpels had ovules. The centre of the cup exhibited a larger carpellary leaf so folded as to enclose one or more similar though more delicate leaves and a growing point, representing a continuation of the stem. This point gradually elongated, developed towards one side two lanceolate decurrent leaves or bracts, which, like itself, assumed a reddish colour. Having acquired about an inch in length, it shot out five ovate-lanceolate, acuminate sepals, confluent at their base and decurrent, not on the same plane but spirally arranged, and also tinged red. Thus a second flower grew in all respects like the first, except that it had a very indistinct receptacle. During the development of the second, the first flower withered, its petals falling away. The axis of the second inflorescence, endued with the like powers of growth, extended itself, produced a sheathing bract, then swelled into a half-globular receptacle, with five sepals as in the last, but here set in a regular whorl on the same plane, and having two bracts, like themselves, immediately external to them.

The petals of this third flower were numerous, small indeed, but sweet-scented: the stamens numerous, containing pollen; whilst a few very rudimentary, slender, carpellary leaves and styles surrounded a larger involuted one containing a growing point along with two or three pistils terminated by stigmas.

In this terminal inflorescence (examined whilst actually flowering) the carpellary leaves were smallest, and the leaf-like character most lost; whilst many styles, hairy and delicate, occupied the concavity of the receptacle, and apparently had perfect carpels at their base.

The production of these three flowers in sequence occupied two months.

On a longitudinal section the growing point in each flower was seen not to have proceeded from the exact centre or actual axis of the receptacle, but rather from one side. Hence both the irregular peduncles curved so as to maintain the flower in the same line with the original stem.

In another monstrosity, in which two flowers were produced on the same continuous axis, the sepals exhibited a tendency to be compound by developing imperfect leaflets.

In a third example the sepals had grown into large compound leaves, having two leaflets on each side the petiole, and a very large

terminal one. In this case too, where but one flower formed, the growing point started at nearly a right angle to the original peduncle, and then, curving to bring itself in the same straight line, grew into a strong shoot, forming at its apex a good bud (flower) for the winter.

A similar growth of the calyx into actual leaves occurred in another case.

The last irregularity to which I shall refer is, where the axis of a flower grew into a strong leafy shoot. In this case no cup-like receptacle existed, but the carpels were placed on a disk-like expansion surrounding the stem, which appeared little more than a large node from which the leaves had fallen. The carpels here extended upwards in a green, leafy form, and were deficient of ovules. Eight such, with dilated, capsule-like bases, were found in a whorl on the same plane; and within these, two close together, longer and of a more leaf-like character. Above these last, five more evident leaves, four of which were actually trifoliate, were disposed in a spiral manner around the axis for the space of an inch above the carpellary whorl. Then a node occurred, surrounded by six pinnate leaves, not quite on the same plane, and yet not in opposite pairs, nor clearly spiral in position. Three-quarters of an inch from these leaves the shoot ended by a terminal bud (winter) surrounded by three pinnate leaves of unequal size.

These instances of monstrosity well illustrate the morphology of carpels—their origin from leaves, and their tendency to take on the form, and along with this, the spiral arrangement of the latter. The perfect pinnate leaves of a shoot proceeding from the centre of a rose we must suppose to be morphologically the same with the small folded carpellary leaf; the last instance cited shows the grades of development between the two.

The production of the shoot causes the abortion of the flower and its ovules; hence the size and vigour of the shoot afford a measure of the vital vegetative force expended in the formation of a flower, and mainly of its ovules.

I am inclined to believe with Schleiden, that the ovule is a product of the axis and not of the carpellary leaves; that indeed it is a bud growing from the axis in the axil of a leaf—*i. e.* the carpel.

On the Change of Colour in a Chamæleon (Chamæleo vulgaris).

By H. N. TURNER, Jun.

Notwithstanding that the peculiarity of the Chamæleon in changing its colour is so universally known, and that an illustrated work on the subject was published by Van de Höven, I have thought that a careful record of the varieties of tint, presented by the specimen which has lived for some time in my possession, might prove serviceable to the naturalist if compared with similar observations upon other species and upon the same one under different circumstances, and might also assist in the determination of the means by which it is effected, the influences by which it is regulated, and the objects which it serves in the œconomy of the animal.